

Input Set : A:\241421.txt

Output Set: N:\CRF3\12142001\I005429.raw

ENTERED

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3 <110> APPLICANT: Sewalt, Vincent
              Hastings, Craig
      5
              Meeley, Robert
              Hantke, Sabine
      6
              Jung, Rudolf
              Everard, John
              Allen, Stephen
     11 <120> TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR ALTERING THE DISULFIDE STATUS
OF PROTEINS
    13 <130> FILE REFERENCE: 5718-119 (035718/241421)
C--> 15 <140> CURRENT APPLICATION NUMBER: US/10/005,429
C--> 15 <141> CURRENT FILING DATE: 2001-12-03
    15 <150> PRIOR APPLICATION NUMBER: 60/250,703
     16 <151> PRIOR FILING DATE: 2000-12-01
    18 <160> NUMBER OF SEQ ID NOS: 25
    20 <170> SOFTWARE: PatentIn version 3.0
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    24 <212> TYPE: DNA
    25 <213> ORGANISM: Zea mays
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    28 <221> NAME/KEY: CDS
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    34 tgattatttc taggaaacac atgccggaat gagggcacca ttatccgcgt ccagtgtgtc
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    36 egetacteeg etececetea gteeteagtt eeteacetag eggtagegtg egegegggag
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    38 acgtag atg gcg gct tcg gag gcg gca gcg gcg gca aca ccg gtg
                                                                              228
              Met Ala Ala Ser Glu Ala Ala Ala Ala Ala Thr Pro Val
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    40
    42 acg ccg aca gag ggg acg gtg atc gcg atc cac agc ctg gag gag tgg
                                                                              276
    43 Thr Pro Thr Glu Gly Thr Val Ile Ala Ile His Ser Leu Glu Glu Trp
                            20
                                                25
    46 age ate cag ate gag gag gee aae age gee aag aag etg gtg gtg att
                                                                              324
    47 Ser Ile Gln Ile Glu Glu Ala Asn Ser Ala Lys Lys Leu Val Val Ile
                       35
                                            40
    50 gac ttc act gca aca tgg tgt cct ccg tgc cgc gcc atg gct cca att
                                                                              372
    51 Asp Phe Thr Ala Thr Trp Cys Pro Pro Cys Arg Ala Met Ala Pro Ile
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    54 ttt gct gat atg gcc aag aag tcc cca aat gtt gtt ttc ctg aaa gtt
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    55 Phe Ala Asp Met Ala Lys Lys Ser Pro Asn Val Val Phe Leu Lys Val
                                   70
    58 gat gtg gat gaa atg aag acc att gct gag caa ttc agc gta gag gcc
                                                                              468
    59 Asp Val Asp Glu Met Lys Thr Ile Ala Glu Gln Phe Ser Val Glu Ala
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                                                    90
    62 atg cca aca ttc ctg ttc atg agg gag ggc gac gtc aag gac agg gtc
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    63 Met Pro Thr Phe Leu Phe Met Arg Glu Gly Asp Val Lys Asp Arg Val
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Input Set : A:\241421.txt

Output Set: N:\CRF3\12142001\1005429.raw

66 gtt ggc gca gca aag gaa gag cta gca agg aag ctt gaa cta cac atg	564
67 Val Gly Ala Ala Lys Glu Glu Leu Ala Arg Lys Leu Glu Leu His Met	
68 115 120 125	
70 gcc tcg tag atcagtgatg ccgtaatgta gtattcgcct aaataagagg	613
71 Ala Ser	
74 acgectegee teaactetga gaaaactagt gettetgtga tggtaatteg tatgagagag	673
76 tgcccccttt ggtggtactt cttcgtatgt agtattaact cctgtcttaa tatgttgccc	733
78 tgcttgtgct tttcatacca tgtttgctct ttcagctgag gtgttaaaaa aaaaaaaaaa	793
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98 Gln Ile Glu Glu Ala Asn Ser Ala Lys Lys Leu Val Val Ile Asp Phe	
99 35 40 45	
102 Thr Ala Thr Trp Cys Pro Pro Cys Arg Ala Met Ala Pro Ile Phe Ala	
103 50 55 60	
106 Asp Met Ala Lys Lys Ser Pro Asn Val Val Phe Leu Lys Val Asp Val	
107 65 70 75 80	
110 Asp Glu Met Lys Thr Ile Ala Glu Gln Phe Ser Val Glu Ala Met Pro	
111 85 90 95	
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Met Ala Ala Ser Glu Ala Ala Ala Ala Ala Thr Pro Val	
136 1 5 10	
138 gcg ccg aca gag ggg acg gtg atc gcg atc cac agc ctg gag gag tgg	158
139 Ala Pro Thr Glu Gly Thr Val Ile Ala Ile His Ser Leu Glu Glu Trp	
140 15 20 25 30	
142 agc atc cag atc gag gag gcc aac agc gcc aag aag ctg gtg gtg att	206
143 Ser Ile Gln Ile Glu Glu Ala Asn Ser Ala Lys Lys Leu Val Val Ile	
144 35 40 45	
146 gac ttc act gca aca tgg tgt cct ccg tgc cgc gcc atg gct cca att	254

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147																	
148	Asp	Phe	Thr	Ala 50	Thr	Trp	Cys	Pro	Pro 55	Cys	Arg	Ala	Met	Ala 60	Pro	Ile	
	+++	act	gat		acc	аап	aad	tcc		aat	att	att	ttc	cta	aaa	att	302
		•	_		_	_	_				_	-		_	Lys	-	00-
152		мта	65	Mec	AIG	цуз	цуз	70	110	ASII	Val	Val	75	пси	Lys	, u _	
																~~~	350
															gag		350
			Asp	GLu	Met	Lys		тте	Ата	GIU	GIn		ser	vaı	Glu	Ата	
156		80					85					90					
															agg		398
159	Met	Pro	Thr	Phe	Leu	Phe	Met	Arg	Glu	Gly	Asp	Val	Lys	Asp	Arg	Val	
160	95					100					105					110	
162	gtt	ggc	gca	gca	aag	gaa	gag	cta	gca	agg	aag	ctt	gaa	cta	cac	atg	446
163	Val	Gly	Āla	Ala	Lys	Glu	Glu	Leu	Āla	Arq	Lys	Leu	Glu	Leu	His	Met	
164		- 1			115					120	-				125		
	qcc	tca	taσ	atca	_	ata d	cata	atat	a of		racci	aaa	ataad	тада			495
	Ala	_	cug	u coc	*9 c 9 c	109	20900	tu ug i	-u 9 ·		,,,,,,			,~55			
			700 t		at at a	T 2 (T 2		1+ a a t	- act	toto	entr	taat	-22+1	ca t	tatos	agagag	555
	_		,			_		_	_	•	-			-	_		615
	-				-		_	_	-							tgccc	
	_	٠.	,			-	-	•		-					-	itcgga	675
	_			-		•										ıaaaaa	735
178	aaaa	aaaaa	aaa a	aaaaa	aaaaa	aa aa	aaaaa	aaaaa	a aaa	aaaaa	aaaa	aaaa	aaaaa	aaa a	aaaaa	aaaaa	795
	aaaa																799
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185	<212	2> T	PE:	PRT													
186	Z213	3> OF	2 7 N NT 2	CM.	700	marro											
T00	V213	<i></i>	KUAN	LSM:	Zea	may:	>										
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188 190 191 194 195 198 199 202 203	<400 Met 1 Thr Gln	O> SH Ala Glu Ile Ala 50	EQUENT Ala Gly Glu 35 Thr	Thr 20 Glu	4 Glu 5 Val Ala Cys	Ala Ile Asn Pro	Ala Ala Ser Pro 55	Ile Ala 40 Cys	His 25 Lys Arg	10 Ser Lys Ala	Leu Leu Met	Glu Val Ala 60	Glu Val 45 Pro	Trp 30 Ile Ile	15 Ser Asp Phe	Ile Phe Ala	
188 190 191 194 195 198 199 202 203 206	<400 Met 1 Thr Gln Thr	O> SH Ala Glu Ile Ala 50	EQUENT Ala Gly Glu 35 Thr	Thr 20 Glu	4 Glu 5 Val Ala Cys	Ala Ile Asn Pro	Ala Ala Ser Pro 55	Ile Ala 40 Cys	His 25 Lys Arg	10 Ser Lys Ala	Leu Leu Met Phe	Glu Val Ala 60	Glu Val 45 Pro	Trp 30 Ile Ile	15 Ser Asp	Ile Phe Ala Val	
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188 190 191 194 195 198 199 202 203 206 207 210 211 214 215	<pre>&lt;400 Met 1 Thr Gln Thr Asp 65 Asp Thr</pre>	O> SI Ala Glu Ile Ala 50 Met Glu Phe	EQUENT Ala Gly Glu 35 Thr Ala Met Leu	Thr 20 Glu Trp Lys Lys Phe 100	4 Glu 5 Val Ala Cys Lys Thr 85 Met	Ala Ile Asn Pro Ser 70 Ile Arg	Ala Ser Pro 55 Pro Ala Glu	Ile Ala 40 Cys Asn Glu Gly	His 25 Lys Arg Val Gln Asp 105	10 Ser Lys Ala Val Phe 90 Val	Leu Leu Met Phe 75 Ser Lys	Glu Val Ala 60 Leu Val	Glu Val 45 Pro Lys Glu Arg	Trp 30 Ile Ile Val Ala Val 110	15 Ser Asp Phe Asp Met 95 Val	Ile Phe Ala Val 80 Pro Gly	
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188 190 191 194 195 198 199 202 203 206 207 210 211 214 215 218 219	<pre>&lt;400 Met 1 Thr Gln Thr Asp 65 Asp Thr Ala</pre>	O> SI Ala Glu Ile Ala 50 Met Glu Phe	Gly Glu 35 Thr Ala Met Leu Lys 115	Thr 20 Glu Trp Lys Lys Phe 100 Glu	4 Glu 5 Val Ala Cys Lys Thr 85 Met Glu	Ala Ile Asn Pro Ser 70 Ile Arg	Ala Ser Pro 55 Pro Ala Glu	Ile Ala 40 Cys Asn Glu Gly Arg	His 25 Lys Arg Val Gln Asp 105	10 Ser Lys Ala Val Phe 90 Val	Leu Leu Met Phe 75 Ser Lys	Glu Val Ala 60 Leu Val	Glu Val 45 Pro Lys Glu Arg	Trp 30 Ile Ile Val Ala Val 110	15 Ser Asp Phe Asp Met 95 Val	Ile Phe Ala Val 80 Pro Gly	
188 190 191 194 195 198 199 202 203 206 207 210 211 214 215 218 219 222	<pre>&lt;400 Met 1 Thr Gln Thr Asp 65 Asp Thr Ala &lt;210</pre>	O> SI Ala Glu Ile Ala 50 Met Glu Phe Ala O> SE	Gly Glu 35 Thr Ala Met Leu Lys 115	NCE: Ser Thr 20 Glu Trp Lys Lys Phe 100 Glu	Glu 5 Val Ala Cys Lys Thr 85 Met Glu 5	Ala Ile Asn Pro Ser 70 Ile Arg	Ala Ser Pro 55 Pro Ala Glu	Ile Ala 40 Cys Asn Glu Gly Arg	His 25 Lys Arg Val Gln Asp 105	10 Ser Lys Ala Val Phe 90 Val	Leu Leu Met Phe 75 Ser Lys	Glu Val Ala 60 Leu Val	Glu Val 45 Pro Lys Glu Arg	Trp 30 Ile Ile Val Ala Val 110	15 Ser Asp Phe Asp Met 95 Val	Ile Phe Ala Val 80 Pro Gly	
188 190 191 194 195 198 199 202 203 206 207 210 211 214 215 218 219 222 223	<pre>&lt;400 Met 1 Thr Gln Thr Asp 65 Asp Thr Ala &lt;210 &lt;211</pre>	O> SI Ala Glu Ile Ala 50 Met Glu Phe Ala O> SE L> LE	Gly Glu 35 Thr Ala Met Leu Lys 115 EQ ITENGTH	Thr 20 Glu Trp Lys Lys Phe 100 Glu NO:	Glu 5 Val Ala Cys Lys Thr 85 Met Glu 5	Ala Ile Asn Pro Ser 70 Ile Arg	Ala Ser Pro 55 Pro Ala Glu	Ile Ala 40 Cys Asn Glu Gly Arg	His 25 Lys Arg Val Gln Asp 105	10 Ser Lys Ala Val Phe 90 Val	Leu Leu Met Phe 75 Ser Lys	Glu Val Ala 60 Leu Val	Glu Val 45 Pro Lys Glu Arg	Trp 30 Ile Ile Val Ala Val 110	15 Ser Asp Phe Asp Met 95 Val	Ile Phe Ala Val 80 Pro Gly	
188 190 191 194 195 198 199 202 203 206 207 210 211 214 215 218 219 222 223 224	<pre>&lt;400 Met 1 Thr Gln Thr Asp 65 Asp Thr Ala &lt;210 &lt;211 &lt;212</pre>	O> SI Ala Glu Ile Ala 50 Met Glu Phe Ala O> SE L> LE 2> TY	Gly Glu 35 Thr Ala Met Leu Lys 115 EQ ITENGTE	Thr 20 Glu Trp Lys Lys Phe 100 Glu NO: H: 36	Glu 5 Val Ala Cys Lys Thr 85 Met Glu 57	Ala Ile Asn Pro Ser 70 Ile Arg Leu	Ala Ala Ser Pro 55 Pro Ala Glu Ala	Ile Ala 40 Cys Asn Glu Gly Arg	His 25 Lys Arg Val Gln Asp 105	10 Ser Lys Ala Val Phe 90 Val	Leu Leu Met Phe 75 Ser Lys	Glu Val Ala 60 Leu Val	Glu Val 45 Pro Lys Glu Arg	Trp 30 Ile Ile Val Ala Val 110	15 Ser Asp Phe Asp Met 95 Val	Ile Phe Ala Val 80 Pro Gly	
188 190 191 194 195 198 199 202 203 206 207 210 211 214 215 218 219 222 223 224 225	<pre>&lt;400 Met 1 Thr Gln Thr Asp 65 Asp Thr Ala &lt;210 &lt;211 &lt;212 &lt;213</pre>	O> SI Ala Glu Ile Ala 50 Met Glu Phe Ala O> SE L> LE 2> TY 3> OF	Gly Glu 35 Thr Ala Met Leu Lys 115 EQ II ENGTH	Thr 20 Glu Trp Lys Lys Phe 100 Glu NO: H: 36 DNA	Glu 5 Val Ala Cys Lys Thr 85 Met Glu 57	Ala Ile Asn Pro Ser 70 Ile Arg Leu	Ala Ala Ser Pro 55 Pro Ala Glu Ala	Ile Ala 40 Cys Asn Glu Gly Arg	His 25 Lys Arg Val Gln Asp 105	10 Ser Lys Ala Val Phe 90 Val	Leu Leu Met Phe 75 Ser Lys	Glu Val Ala 60 Leu Val	Glu Val 45 Pro Lys Glu Arg	Trp 30 Ile Ile Val Ala Val 110	15 Ser Asp Phe Asp Met 95 Val	Ile Phe Ala Val 80 Pro Gly	
188 190 191 194 195 198 199 202 203 206 207 210 211 214 215 218 219 222 223 224 225 227	<pre>&lt;400 Met 1 Thr Gln Thr Asp 65 Asp Thr Ala &lt;210 &lt;211 &lt;212</pre>	O> SI Ala Glu Ile Ala 50 Met Glu Phe Ala O> SE C> TY S> OF	Gly Glu 35 Thr Ala Met Leu Lys 115 EQ II ENGTH	Thr 20 Glu Trp Lys Lys Phe 100 Glu NO: H: 36 DNA	Glu 5 Val Ala Cys Lys Thr 85 Met Glu 57 Zea	Ala Ile Asn Pro Ser 70 Ile Arg Leu	Ala Ala Ser Pro 55 Pro Ala Glu Ala	Ile Ala 40 Cys Asn Glu Gly Arg	His 25 Lys Arg Val Gln Asp 105	10 Ser Lys Ala Val Phe 90 Val	Leu Leu Met Phe 75 Ser Lys	Glu Val Ala 60 Leu Val	Glu Val 45 Pro Lys Glu Arg	Trp 30 Ile Ile Val Ala Val 110	15 Ser Asp Phe Asp Met 95 Val	Ile Phe Ala Val 80 Pro Gly	

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Output Set: N:\CRF3\12142001\I005429.raw

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236 gcg gag gtc gca agg aca tgg aag gta gag gcg atg cca acg ttc gta
                                                                            95
237 Ala Glu Val Ala Arg Thr Trp Lys Val Glu Ala Met Pro Thr Phe Val
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                                         25
240 ctt gtc aag gat ggg aag gag gta agc cgt gtg gtt ggg gcc aag aag
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241 Leu Val Lys Asp Gly Lys Glu Val Ser Arg Val Val Gly Ala Lys Lys
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244 gac gag ctt gag agg aag atc cgg atg ttc acg tca tct tcc tca tcg
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245 Asp Glu Leu Glu Arg Lys Ile Arg Met Phe Thr Ser Ser Ser Ser Ser
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                                                     60
248 taa actootgtgg ttogootggg acggagttge tgaagtgaaa tggtcootto
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250 teteaatget gaaaaaaggg ggaaaaacta tgtgaaaatg atggtagaeg tgtetgggte
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259 <212> TYPE: PRT
260 <213> ORGANISM: Zea mays
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272 Val Lys Asp Gly Lys Glu Val Ser Arg Val Val Gly Ala Lys Lys Asp
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291
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294 acc tta gtg acg ccc cct ccg ccc gcc gcc gac gac ccg aac tgc gcc
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295 Thr Leu Val Thr Pro Pro Pro Pro Ala Ala Asp Asp Pro Asn Cys Ala
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298 gtg gtg gcc gcg cac tcc aag gcc acc tac gac gag cag tgg gcc
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299 Val Val Ala Ala His Ser Lys Ala Thr Tyr Asp Glu Gln Trp Ala Ala
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                                30
302 cac aag agc agc agc cag ctg atg gtg atc gac ttc tcg gcg tcc tgg
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307 Cys Gly Pro Cys Arg Phe Ile Glu Pro Ala Phe Lys Glu Leu Ala Ser
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                                                                          295
310 cgc ttc acc gat gcc atc ttc atc aag gtc gac gtc gac gag ctc gcg
311 Arg Phe Thr Asp Ala Ile Phe Ile Lys Val Asp Val Asp Glu Leu Ala
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314 gag gtc gca agg aca tgg aag gta gag gcg atg cca acg ttc gtg ctg
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315 Glu Val Ala Arg Thr Trp Lys Val Glu Ala Met Pro Thr Phe Val Leu
                                    95
                                                                          391
318 gtc aag gat ggg aag gag gta ggc cgt gtg att ggg gct aag aag gac
319 Val Lys Asp Gly Lys Glu Val Gly Arg Val Ile Gly Ala Lys Lys Asp
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322 gag ctt gag agg aag atc agg atg ttc gtc acg tca tct tcc tcg tcc
323 Glu Leu Glu Arg Lys Ile Arg Met Phe Val Thr Ser Ser Ser Ser Ser
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330 aagaagtata tgaaaaaatg atggtagacg tgtctgggtc aataagagtt tctgaaactt
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332 ggatttgtat gtgtcagtct ctgtgttctg tttccaagga atggatcatg tgagtttgga
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334 atatagctgg aaatatgttg tgctgttaaa aaaaaaaaa aaaaaaaa
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337 <210> SEQ ID NO: 8
338 <211> LENGTH: 134
339 <212> TYPE: PRT
340 <213> ORGANISM: Zea mays
342 <400> SEQUENCE: 8
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            35
356 Asp Phe Ser Ala Ser Trp Cys Gly Pro Cys Arg Phe Ile Glu Pro Ala
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360 Phe Lys Glu Leu Ala Ser Arg Phe Thr Asp Ala Ile Phe Ile Lys Val
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364 Asp Val Asp Glu Leu Ala Glu Val Ala Arg Thr Trp Lys Val Glu Ala
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368 Met Pro Thr Phe Val Leu Val Lys Asp Gly Lys Glu Val Gly Arg Val
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372 Ile Gly Ala Lys Lys Asp Glu Leu Glu Arg Lys Ile Arg Met Phe Val
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380 <210> SEQ ID NO: 9
381 <211> LENGTH: 722
382 <212> TYPE: DNA
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383 <213> ORGANISM: Zea mays

VERIFICATION SUMMARY
PATENT APPLICATION: US/10/005,429

DATE: 12/14/2001
TIME: 11:11:20

Input Set : A:\241421.txt

Output Set: N:\CRF3\12142001\I005429.raw

L:15 M:270 C: Current Application Number differs, Replaced Current Application No L:15 M:271 C: Current Filing Date differs, Replaced Current Filing Date L:775 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:17 L:775 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:17 L:777 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:17 L:777 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:17 L:783 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:17 L:783 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:17 L:787 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:17 L:787 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:17 L:789 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:17 L:789 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:17 L:791 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:17 L:791 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:17 L:810 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:18 L:844 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:18 L:846 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:18 L:848 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:18